




# **Stormwater Management Manual for Eastern Washington**

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**September 2004  
Publication Number 04-10-076**

 *Printed on Recycled Paper*

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Washington State Department of Ecology  
Water Quality Program

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# Foreword

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## Objective of the Manual

Urban development causes significant changes in patterns of stormwater flow from land into receiving waters. Water quality can be affected when runoff carries sediment or other pollutants into streams, wetlands, lakes, and marine waters or into groundwater. Stormwater management can help to reduce these effects. Stormwater management involves careful application of site design principles, construction techniques and source controls to prevent sediment and other pollutants from entering surface or groundwater, treatment of runoff to reduce pollutants, and flow controls to reduce the impact of altered hydrology.

The objective of the *Stormwater Management Manual for Eastern Washington* (Manual) is to provide guidance in stormwater design and management for eastern Washington. The Manual aims to provide a commonly accepted set of technical standards, in addition to presenting new design information and new approaches to stormwater management. The Department of Ecology believes that when the standards and recommendations of this Manual are properly applied, stormwater runoff should generally comply with water quality standards and protect beneficial uses of the receiving waters. Ecology recognizes that individual circumstances vary greatly, and in some instances compliance with the Manual may not ensure compliance with water quality standards.

## Background and Development of the *Stormwater Management Manual for Eastern Washington*

Many guidance manuals for stormwater have been written to address national, regional, and local characteristics and management needs. In Washington, several guidance manuals have been prepared, used, and updated to address regional and local requirements. Ecology published the *Stormwater Management Manual for Western Washington* in August 2001 as an update to a predecessor manual prepared in 1992 and initially proposed that the manual for western Washington could be updated to cover the entire state of Washington. Eastern Washington representatives requested that Ecology instead create a separate manual for the eastern portion of the state. Based upon these requests and upon recognition of the significantly different climate, hydrology and geology of eastern Washington, Ecology agreed to create a separate manual.

Discussions continued at various conferences, meetings and forums to determine the best method to accomplish this effort. A chartering meeting was held in June 2001 to formalize the structure and process for preparing the Manual for eastern Washington. The meeting was attended by more

than 70 representatives of 17 cities, 11 counties and 5 federal and state agencies with interests in stormwater management in eastern Washington.

The chartering meeting established a ten-person Steering Committee with several alternate members to lead the overall effort; it also created two Subcommittees: one for leading the preparation of the Technical Stormwater Manual, and another for leading the preparation of a Model Municipal Stormwater Program. Ecology agreed to fund the hiring of a consultant team to support the development and preparation of the documents and to assist the Steering Committee and Subcommittees with meeting coordination, public involvement and related project tasks. Proposals were received by four consultant teams in October 2001; the Steering Committee selected the team lead by Tetra Tech/KCM of Spokane.

A project kick-off meeting was held on November 7, 2001 with members of the Steering Committee, Ecology, and the consultant team. The scope of work for the project and a proposed production schedule were prepared; a budget was prepared and the work began. A stakeholder workshop was held on November 29, 2001 to inform interested parties about the project efforts, the regulatory requirements, the schedule for meetings, and the document production format. After the introductory sessions, concurrent meetings of the Subcommittees were held to begin the development of the Manual and the Model Program. Meetings were held at least once per month to review drafts and updates for each chapter of each document. Periodic presentations were made to address special stormwater management issues. These efforts resulted in draft documents being submitted for public review in fall 2002.

Following the public comment period, the subcommittees reviewed all of the comments received on both of the documents and agreed to minor revisions to the Model Program and substantive revisions to the Manual. The final Model Program was published in September 2003. It is available at this website: [www.ecy.wa.gov/biblio/0310076.html](http://www.ecy.wa.gov/biblio/0310076.html). The Manual underwent a second round of public review in summer 2003. This document results from the subcommittee's review of those comments.

## **Acknowledgement of the Eastern Washington Stormwater Management Steering Committee and Manual Subcommittee**

Ecology would like to thank the members of the Eastern Washington Stormwater Management Steering Committee for their valuable commitment of time and leadership in leading the process to develop this Manual and the *Model Municipal Stormwater Program for Eastern Washington*.

Ecology would also like to thank the Eastern Washington Stormwater Manual Subcommittee participants for their valuable commitment of time

and energy in helping develop, review and shape the contents of this document.

### **Eastern Washington Stormwater Management Steering Committee**

Ross Dunfee, Benton County, *Steering Committee Chair*

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*Steering Committee Co-Chair*

Steve Worley, City of Spokane Valley, *Manual Subcommittee Chair*

Nancy Aldrich, City of Richland, *Manual Subcommittee Co-Chair*

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Lloyd Brewer, City of Spokane, *Model Program Subcommittee Co-Chair*

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## Organization of this Manual

### **Chapter 1: Introduction**

The first chapter explains the need for a technical stormwater management manual, what the Manual is, and how the Manual is intended to be used. It provides the regulatory framework for the Manual.

### **Chapter 2: Core Elements for New Development and Redevelopment**

This chapter describes the components of a successful stormwater management program. It provides the technical basis for eight specific elements of stormwater management that are required for most projects and describes the conditions under which one or more elements may or may not apply to a particular project.

### **Chapter 3: Preparation of Stormwater Site Plans**

This chapter provides guidance for preparing the individual site plans upon which each project activity's success in managing stormwater will depend.

### **Chapter 4: Hydrologic Analysis and Design**

This chapter identifies and describes the recommended methodologies for sizing and designing water quality treatment and flow control facilities.

### **Chapter 5: Runoff Treatment Facility Design**

This chapter provides specific design information for runoff treatment systems, including infiltration treatment facilities and pre-treatment facilities required for Underground Injection Control (UIC) Program rule-authorized subsurface infiltration systems such as drywells.

### **Chapter 6: Flow Control Facility Design**

This chapter provides specific design information for flow control facilities including detention, retention, evaporation, and infiltration systems.

**Chapter 7: Construction Stormwater Pollution Prevention**

This chapter identifies and describes best management practices for preventing pollution, particularly from erosion and sediment runoff, during the construction phase of a project.

**Chapter 8: Source Control**

The final chapter identifies and describes best management practices to prevent contamination of stormwater runoff.

**Bibliography**

Sources and references are listed for each chapter in a combined bibliography at the end of the Manual.

**Glossary**

Definitions of key terms used in the Manual are provided in the last section of the Manual.



